1. Influenza Notifications in Queensland

Figure 1: Influenza notifications in Queensland by type and week of onset from 1st January 2011 to 25th September 2011 and influenza like illness (ILI) presentation rates per 1000 consultations reported to the ASPREN sentinel network 1st January 2011 to 25th September 2011.

Data Sources: Queensland Health Notifiable Conditions Register 2709/2011 and ASPREN website 27/09/2011

Influenza Notifications

Year to date (YTD) there have been 9567 notifications of influenza in Queensland. Subtype is recorded for 3591 of the 7736 notifications of influenza A, comprising 2912 pandemic (H1N1)2009 and 679 H3N2. There have been 1824 notifications of influenza B. Typing data were unavailable for seven notifications.

Figure 1 shows notifications for influenza A and B by week of onset and Influenza Like Illness (ILI) presentation rates, per 1000 consultations, by week. Please see section below for an explanation of the Australian Sentinel Practices Research Network (ASPREN). Untyped influenza notifications have been excluded from this graph.

The YTD notification count is 1.7 times the five year mean for the same period. However, it is important to note that the profile of influenza notifications is not the same each year, especially with regard to the start of the season. Comparison of YTD data, or counts during a particular week, across years may be misleading. In addition, there have been changes to diagnostic methods and test requesting practises in recent years, which may influence counts.
The 2011 profile shows significant inter-seasonal activity at the beginning of the year. There was a sustained increasing trend in notifications from around week 21, which is consistent with the commencement of the 2011 influenza season. The downward trend from week 33 is consistent with a season peak in week 32, with 1006 notifications.

Please note that recent week notifications will usually be under estimated in data presented by date of disease onset.

![Figure 2: Age and gender profile of Influenza notifications and age specific rates in Queensland (2011) to 25th September.](image_url)

Data Sources: Queensland Health Notifiable Conditions Register 27/09/2011
*The Estimated Resident Population – (ERP), 2009 was used

Figure 2 shows 2011 YTD influenza notifications and rates by age group and gender. The highest influenza notification rate occurred in the 1-4 age group (449.8 per 100,000 population) and the lowest rate occurred in the 80+ age group (101.2 per 100,000 population). The median age of notification was 24 years and the age range was <1 to 96 years. Influenza notifications were slightly higher in females (53%) than males (47%).

Table 1 provides a weekly count of influenza notifications by Health Service District (HSD) and YTD totals. Darling Downs and West Moreton are now separate HSD and this is reflected in the table. Some numbers may not be directly comparable with previous reports. Recent week data will be an underestimate.
Table 1: Influenza notifications by week of onset and Health Service District (HSD) from north (top) to south (bottom), Queensland, 2011 (as on 25 September)

| Health Service District                        | Week of onsets | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|-----------------------------------------------|----------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Torres Strait-Northern Peninsula              |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Cape York                                     |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Cairns And Hinterland                         |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Mount Isa                                     |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Townsville                                    |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Mackay                                        |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Central Queensland                            |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Wide Bay                                      |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Sunshine Coast                                |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Metro North                                   |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Metro South                                   |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Darling Downs                                 |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| West Moreton                                  |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Central West                                  |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| South West                                    |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |
| Gold Coast                                    |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |

Queensland (Total)                             |                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  |

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19 September 2011

3 of 7
ASPREN
ASPREN is a national syndromic surveillance program co-ordinated by the Discipline of General Practice at the University of Adelaide and The Royal Australian College of General Practitioners. One of the conditions under surveillance is influenza like illness (ILI).

General practitioners (GP) participating in the ASPREN program contribute data on the proportion of consultations which are ILI related. Currently there are 19 Queensland GPs participating in the program, although weekly participation rate may vary.

Figure 1 shows ILI rates, as presentations per 1000 consultations, for Queensland GPs participating in the ASPREN program. An increasing trend is apparent from week 27 and is generally consistent with the profile of laboratory confirmed influenza notifications. There is a downward trend beginning in week 33. Caution should be used in interpreting these data, which may be subject to change due to delays in data submission. Recent week (39) data may be incomplete.

2. Influenza Activity in Australia (reporting period 3rd September to 16th September, 2011)\(^1\)

- Levels of influenza-like illness (ILI) in the community have started to decrease through both sentinel general practitioner surveillance systems and ILI presentations to emergency departments.

- Notifications have continued to be highest in Queensland and South Australia, with New South Wales also still high. Notifications are decreasing across most states and territories, however notifications in the Northern Territory, South Australia, Victoria and Western Australia appear to have reached a plateau.

- During this fortnight there were 1,958 laboratory confirmed notifications of influenza, with Queensland reporting the highest number of notifications, followed by South Australia. Nationally, the majority of virus detections have been pandemic (H1N1) 2009, with co-circulation of influenza B.

- In the Northern Territory this fortnight notifications of influenza A/H3N2 represented 75% of their notifications, and nationally the majority of A/H3N2 notifications are being reported from the Northern Territory and Western Australia. In Tasmania and more recently New South Wales, influenza B continues to be the dominant strain.

- As at 16 September 2011, there have been 22,303 confirmed cases of influenza reported to the National Notifiable Diseases Surveillance System (NNDSS) in 2011. Nationally, weekly notifications for this season have peaked. This season’s peak appears to have occurred in the week ending 5 August 2011 with 1,976 influenza notifications, and was above the peak frequency experienced in previous years, except 2009.
**FluTracking**

FluTracking is a pilot online health surveillance system which aims to detect epidemics of influenza. It is a joint initiative of The University of Newcastle, Hunter New England Area Health Service (NSW Health) and Hunter Medical Research Institute. Participation is voluntary and involves the completion of a weekly online survey during the influenza season.

Data are collected on basic demographics, symptoms of ILI and absenteeism. See the FluTracking website for further information about this program or to enrol as a ‘Flu Tracker’.

**Burden of Illness Pyramid**

A method for estimating the relationship between influenza-like illness at the community level with confirmed influenza laboratory reports. Figure and table below describe surveillance levels from cough and fever through to positive laboratory test for influenza (self-reported) among 1,555 FluTracking participants nationally, for the five weeks beginning week ending 5/5/11 to 5/6/11.

This analysis will be repeated throughout the year to monitor changes in the proportion of ILI cases that progress through each step of the surveillance pyramid as influenza incidence increases. Note that all data is self-reported, (see screenshot of questions over page).

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Figure 3: Influenza burden of illness pyramid reproduced with permission from Dr Craig Dalton flutracking@hnehealth.nsw.gov.au.

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Figure 4: Queensland FluTracking weekly fever and cough rate, stratified by vaccination status, weeks 20-33 in 2011. Figure provided by flutracking@hnehealth.nsw.gov.au.
Figure 4 provides a summary of Queensland FluTracking data from May to early August. There is an increasing and divergent trend in the percentage of unvaccinated participants reporting fever and cough from week 30, compared with those who reported vaccination. Although these data are unlikely to be representative of the Queensland population, the trend is consistent with high levels influenza circulation in the community during the reporting period. No further update on these data was available at the time of reporting.

3. **International Influenza Activity (reporting period 3rd September to 16th September, 2011)**

The WHO has reported that as at 23 September 2011 influenza activity in the temperate regions of the northern hemisphere remains low or undetectable. In the tropical zone, influenza activity is mostly reported as low, with some ongoing transmission reported in countries of the Americas (Cuba, Honduras and Bolivia); western Africa (Cameroon); and southern Asia (India, Thailand, Vietnam and Singapore). Influenza transmission in South Africa has declined low levels, after peaking in early to mid June.

In New Zealand, for the week ending 18 September 2011, the national rate of ILI consultations are currently consistent with baseline activity levels with 7 of the twenty district health boards above the national average weekly consultation rate. Influenza type B and A/H3N2 are the predominant strains currently circulating in New Zealand.

National Influenza Centres in 69 countries have reported that for the period 28 August to 10 September 2011, a total of 1,023 specimens were reported as positive for influenza viruses, 745 (73%) were typed as influenza A and 278 (27%) as influenza B. Of the sub-typed influenza A viruses reported, 43% were pandemic (H1N1)2009 and 57% were influenza A(H3N2).

WHO have released a summary review of the northern hemisphere winter influenza season. The summary review notes that the most commonly detected virus was different in North America, where influenza A(H3N2) and influenza type B co-circulated with pandemic (H1N1) 2009, and Europe, where influenza A(H1N1)2009 was by far the most commonly detected virus. Although it was no longer the predominant influenza virus circulating in many parts of the world, pandemic (H1N1) 2009 otherwise behaved much the same way as it had during the pandemic in terms of the age groups most affected and the clinical pattern of illness. More than 90% of viruses detected around the world during the northern hemisphere influenza season were similar antigenically to those found in the seasonal trivalent influenza vaccine. Antiviral resistance in pandemic (H1N1)2009 remained at a very low level.

The WHO has released their recommendation for the antigen composition of 2011-2012 northern hemisphere influenza season trivalent flu vaccine. It is recommended that vaccines contain the following:

- an A/California/7/2009 (H1N1)-like virus;
- an A/Perth/16/2009 (H3N2)-like virus;
- a B/Brisbane/60/2008-like virus.

This recommended composition is the same as the 2010-2011 Northern Hemisphere and the 2011 Southern Hemisphere vaccine compositions.
4. Virology

**Typing and antigenic characterisation - WHO Collaborating Centre for Reference & Research on Influenza (WHO CC) in Melbourne**

From 1 January to 18 September 2011, there were 1,763 Australian influenza isolates processed by the WHO CC, with 66% (1169/1763) type A and 34% (594/1763) type B. Subtyping of influenza A isolates indicated that 75% (882/1169) were pandemic (H1N1) 2009 and 25% (287/1169) were A/H3N2 (Table 2).

Table 2: Typing of influenza isolates from the WHO Collaborating Centre, from 1 January 2011 to 18 September 2011

<table>
<thead>
<tr>
<th>Type/Subtype</th>
<th>ACT</th>
<th>NSW</th>
<th>NT</th>
<th>QLD</th>
<th>SA</th>
<th>TAS</th>
<th>VIC</th>
<th>WA</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pandemic (H1N1) 2009</td>
<td>9</td>
<td>337</td>
<td>32</td>
<td>308</td>
<td>58</td>
<td>22</td>
<td>87</td>
<td>29</td>
<td>882</td>
</tr>
<tr>
<td>A(H3N2)</td>
<td>1</td>
<td>17</td>
<td>48</td>
<td>137</td>
<td>19</td>
<td>7</td>
<td>46</td>
<td>12</td>
<td>287</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>109</td>
<td>37</td>
<td>105</td>
<td>220</td>
<td>10</td>
<td>107</td>
<td>5</td>
<td>594</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
<td><strong>463</strong></td>
<td><strong>117</strong></td>
<td><strong>550</strong></td>
<td><strong>297</strong></td>
<td><strong>39</strong></td>
<td><strong>240</strong></td>
<td><strong>46</strong></td>
<td><strong>1,763</strong></td>
</tr>
</tbody>
</table>

Please note: There may be up to a month delay on reporting of samples. Isolates tested by the WHO CC are not necessarily a random sample of all those in the community.

Antigenic characterisation has shown influenza isolates to be a close match with the composition of the 2011 southern hemisphere influenza vaccine with some viruses showing reduced reactivity, however there has been insufficient testing to date to determine any general trends.

**Antiviral Resistance**

The WHO Collaborating Centre in Melbourne has reported that from 1 January to 18 September 2011, 15 influenza viral isolates (out of 1,649 tested) have shown resistance to the neuraminidase inhibitor oseltamivir by enzyme inhibition assay (EIA). A further 18 specimens, out of a total of 203 tested by pyrosequencing, have shown the H275Y mutation known to confer resistance to oseltamivir. A total of 33 influenza viruses have shown resistance to oseltamivir in 2011, all have been the pandemic (H1N1) 2009 subtype.

The recent increases in oseltamivir resistance in pandemic (H1N1) 2009 influenza isolates have predominately occurred in the Hunter New England region of New South Wales between June and August 2011. The cluster consists of 29 cases, of which 6 were hospitalised and three were pregnant. A further two oseltamivir-resistant pandemic (H1N1) 2009 viruses, sampled in July and August, have also been found to belong to the cluster. Both of these cases were detected outside the Hunter New England region with no recent travel history to this region. Only one of the cases reported so far were treated with oseltamivir prior to their positive test for influenza, however this was case not the earliest known cases in the cluster. All of the viruses are sensitive to zanamivir and have not shown any antigenic changes that would affect their recognition by vaccine-induced antibodies.

**Reference**